In the Claims:

Cancel, without prejudice, claims 12 - 15 and add new claims 16 - 57 as indicated below:

1 (original). A method for distinguishing between metal objects, comprising the steps of:

interrogating a target with at least two frequencies;

receiving respective electrical response signals from said target for at least said two frequencies;

resolving said response signals into respective portions that are at least primarily resistive;

comparing the magnitudes of at least two of said portions;

selecting one response signal from among said response signals based on the results of said step of comparing; and

characterizing said target by use of said one response signal.

2 (original). The method of claim 1, wherein said step of selecting selects said one

response signal based on whether the respective said portion of said one response signal is larger in magnitude than the respective said portion of another of said response signals.

3 (original). The method of claim 1, wherein said step of selecting selects said one response signal based on whether the respective said portion of said one response signal is larger in magnitude than the respective said portion of all other of said response signals.

4 (original). An apparatus for distinguishing between metal objects, comprising:

an interrogating circuit adapted to interrogate a target with at least two frequencies;

a receiving circuit adapted to receive respective electrical response signals from said target for at least said two frequencies;

a demodulating circuit for resolving said response signals into respective portions that are at least primarily resistive;

a comparing circuit for comparing the magnitudes of said portions; and

a selecting circuit for selecting one response signal from among said response signals based on said comparison.

5 (original). The apparatus of claim 4, further comprising a look-up table for characterizing said target with said one response signal.

6 (original). The apparatus of claim 4, wherein said demodulator circuit includes at least two synchronous demodulators associated respectively with said first and second frequencies.

7 (original). The apparatus of claim 6, wherein said demodulator circuit includes at least four synchronous demodulators associated respectively with the resistive and reactive components for each of said first and second frequencies.

8 (original). A method for distinguishing between metal objects, comprising the steps of:

interrogating an actual target with one or more electromagnetic signals at at least first and second frequencies;

receiving respective first and second electrical response signals from said target associated with said first and second frequencies;

obtaining first data from said first electrical response signal data;

normalizing said first data with respect to predetermined reference data at a third frequency; and

comparing the normalized said data corresponding to said first response signal to data corresponding to said second response signal; and

providing a signal responsive to the results of said step of comparing.

9 (original). The method of claim 8, wherein said third frequency is equal to said second frequency.

10 (original). The method of claim 8, wherein said third frequency is not equal to said second frequency, the method further comprising normalizing the said data corresponding to said second response signal with respect to said predetermined reference data, and wherein said step of comparing includes comparing the normalized said data corresponding to said first response signal to the normalized said data corresponding to said second response signal.

11 (original). The method of claim 8, further comprising providing an output audio representative of the magnitude of at least one of said first and second response signals, and decreasing said audio output as a function of said signal.

12 - 15 (cancelled).

16 (new). A method for identifying a metal target, comprising the steps of:

interrogating the target at a first frequency;

receiving a first electrical response signal from the target associated with said first frequency;

obtaining first data indicative of a first phase angle of said first electrical response signal;

converting said first data so as to be indicative of a first reference phase angle, said first reference phase angle being the phase angle that would result from interrogating the target at a selected reference frequency distinct from said first frequency; and

generating a first identification of the target based on said first reference phase angle.

17 (new). The method of claim 16, further comprising reporting said first identification to a user.

18 (new). The method of claim 16, further comprising:

interrogating the target at a second frequency distinct from said first frequency and said reference frequency;

receiving a second electrical response signal from the target associated with said second frequency;

obtaining second data indicative of a second phase angle of said second electrical response signal; and

converting said second data so as to be indicative of a second reference phase angle, said second reference phase angle being the phase angle that would result from interrogating the target at said reference frequency.

19 (new). The method of claim 18, further comprising generating a second identification of the target based on said second reference phase angle, comparing said first and second identifications and determining whether said first and second identifications agree according to one or more criteria.

20 (new). The method of claim 18, further comprising generating a second identification of the target based on said second reference angle, and reporting both said first and second identifications to a user.

21 (new). The method of claim 18, wherein said reference frequency is between said first and second frequencies.

22 (new). The method of claim 21, further comprising generating a second identification of the target based on said second reference phase angle, comparing said first and second identifications and determining whether said first and second identifications agree according to one or more criteria.

23 (new). The method of claim 21, further comprising generating a second identification of the target based on said second reference angle, and reporting both said first and second identifications to a user.

24 (new). The method of claim 16, further comprising:

interrogating the target at a second frequency distinct from said first frequency and equal to said reference frequency;

receiving a second electrical response signal from the target associated with said second frequency; and

obtaining second data indicative of a second phase angle of said

second electrical response signal.

25 (new). The method of claim 24, further comprising generating a second identification of the target based on said second phase angle, comparing said first and second identifications and determining whether said first and second identifications agree according to one or more criteria.

26 (new). The method of claim 24, further comprising generating a second identification of the target based on said second phase angle, and reporting both said first and second identifications to a user.

27 (new). The method of claim 24, further comprising:

interrogating the target at a third frequency distinct from said first and second frequencies;

receiving a third electrical response signal from the target associated with said third frequency;

obtaining third data indicative of a third phase angle of said third electrical response signal;

converting said third data so as to be indicative of a third reference

phase angle, said third reference phase angle being the phase angle that would result from interrogating the target at said reference frequency.

28 (new). The method of claim 27, further comprising generating a second identification of the target based on said second phase angle, generating a third identification of the target based on said third reference phase angle, comparing said first, second and third identifications, and determining whether at least two of said first, second and third identifications agree according to one or more criteria.

29 (new). The method of claim 27, further comprising generating a second identification of the target based on said second phase angle, generating a third identification of the target based on said third reference phase angle, and reporting at least one of said first, second and third identifications to a user.

30 (new). The method of claim 18, further comprising:

interrogating the target at a third frequency distinct from said first and second frequencies;

receiving a third electrical response signal from the target associated with said third frequency;

obtaining third data indicative of a third phase angle of said third electrical response signal;

converting said third data so as to be indicative of a third reference phase angle, said third reference phase angle being the phase angle that would result from interrogating the target at said reference frequency.

31 (new). The method of claim 30, further comprising generating a second identification of the target based on said second reference phase angle, generating a third identification of the target based on said third reference phase angle, comparing said first, second and third identifications and determining whether at least two of said first, second and third identifications agree.

32 (new). The method of claim 30, further comprising generating a second identification of the target based on said second reference phase angle, generating a third identification of the target based on said third reference phase angle, and reporting at least one of said first, second and third identifications to a user.

33 (new). The method of claim 30, wherein said reference frequency is between two of said first, second and third frequencies.

34 (new). The method of claim 16, further comprising:

interrogating the target at a second frequency distinct from said first frequency;

receiving a second electrical response signal from the target associated with said second frequency;

interrogating the target at a third frequency distinct from said first and second frequencies;

receiving a third electrical response signal from the target associated with said third frequency;

resolving said first, second, and third response signals into respective portions that are at least primarily resistive;

comparing the magnitudes of said respective portions; and

selecting two response signals from among said response signals based on the results of said step of comparing.

35 (new). The method of claim 34, wherein the respective said portions of said first and second response signals each have a greater magnitude than said portion of said third response signal

and as a result said step of selecting selects said first and second response signals, the method further comprising:

obtaining second data indicative of a second phase angle of said second electrical response signal;

converting said second data so as to be indicative of a second reference phase angle, said second reference phase angle being the phase angle that would result from interrogating the target at said reference frequency;

generating a second identification of the target based on said second reference phase angle;

comparing said first and second identifications; and

determining whether said first and second identifications agree according to one or more criteria.

36 (new). The method of claim 34, wherein the respective said portions of said first and second response signals each have a greater magnitude than said portion of said third response signal and as a result said step of selecting selects said first and second response signals, the method further

comprising:

obtaining second data indicative of a second phase angle of said second electrical response signal;

converting said second data so as to be indicative of a second reference phase angle, said second reference phase angle being the phase angle that would result from interrogating the target at said reference frequency;

generating a second identification of the target based on said second reference angle; and

reporting both said first and second identifications to a user.

37 (new). An apparatus for identifying a metal target, comprising:

an interrogating circuit for interrogating the target at a first frequency;

a receiving circuit for receiving a first electrical response signal from the target associated with said first frequency;

a demodulating circuit for obtaining first data indicative of a first phase angle of said first electrical response signal; and

a processing circuit for converting said first data so as to be indicative of a first reference phase angle, said first reference phase angle being the phase angle that would result from interrogating the target at a selected reference frequency distinct from said first frequency, and generating a first identification of the target based on said first reference phase angle.

38 (new). The apparatus of claim 37, further comprising an output device, wherein said processing circuit is adapted for reporting said first identification to a user through said output device.

39 (new). The apparatus of claim 37, wherein said interrogating circuit is further adapted for interrogating the target at a second frequency distinct from said first frequency and said reference frequency, wherein said receiving circuit is further adapted for receiving a second electrical response signal from the target associated with said second frequency, wherein said demodulating circuit is further adapted for obtaining second data indicative of a second phase angle of said second electrical response signal, and wherein said processing circuit is further adapted for converting said second data so as to be indicative of a second reference phase angle, said second reference phase angle being

the phase angle that would result from interrogating the target at said reference frequency.

40 (new). The apparatus of claim 39, wherein said processing circuit is further adapted for generating a second identification of the target based on said second reference phase angle, comparing said first and second identifications and determining whether said first and second identifications agree according to one or more criteria.

41 (new). The apparatus of claim 39, wherein said processing circuit is further adapted for generating a second identification of the target based on said second reference angle, the apparatus further comprising an output device, said processing circuit adapted for reporting both said first and second identifications to a user through said output device.

42 (new). The apparatus of claim 39, wherein said reference frequency is between said first and second frequencies.

43 (new). The apparatus of claim 42, wherein said processing circuit is further adapted for generating a second identification of the target based on said second reference phase angle, comparing said first and second identifications and determining whether said first and second identifications agree according to one or more criteria.

44 (new). The apparatus of claim 42, wherein said processing circuit is further adapted for generating a second identification of the target based on said second reference angle, the

apparatus further comprising an output device, said processing circuit adapted for reporting both said first and second identifications to a user through said output device.

45 (new). The apparatus of claim 38, wherein said interrogating circuit is further adapted for interrogating the target at a second frequency distinct from said first frequency and equal to said reference frequency, wherein said receiving circuit is further adapted for receiving a second electrical response signal from the target associated with said second frequency, and wherein said demodulating circuit is further adapted for obtaining second data indicative of a second phase angle of said second electrical response signal.

46 (new). The apparatus of claim 45, wherein said processing circuit is further adapted for generating a second identification of the target based on said second phase angle, comparing said first and second identifications and determining whether said first and second identifications agree according to one or more criteria.

47 (new). The apparatus of claim 45, wherein said processing circuit is further adapted for generating a second identification of the target based on said second phase angle, the apparatus further comprising an output device, said processing circuit adapted for reporting both said first and second identifications to a user through said output device.

48 (new). The apparatus of claim 45, wherein said interrogating circuit is further adapted for interrogating the target at a third frequency distinct from said first and second frequencies,

wherein said receiving circuit is further adapted for receiving a third electrical response signal from the target associated with said third frequency, wherein said demodulating circuit is further adapted for obtaining third data indicative of a third phase angle of said third electrical response signal, and wherein said processing circuit is further adapted for converting said third data so as to be indicative of a third reference phase angle, said third reference phase angle being the phase angle that would result from interrogating the target at said reference frequency.

49 (new). The apparatus of claim 48, wherein said processing circuit is further adapted for generating a second identification of the target based on said second phase angle, generating a third identification of the target based on said third reference phase angle, comparing said first, second and third identifications, and determining whether at least two of said first, second and third identifications agree according to one or more criteria.

50 (new). The apparatus of claim 48, wherein said processing circuit is further adapted for generating a second identification of the target based on said second phase angle, and generating a third identification of the target based on said third reference phase angle, wherein the apparatus further comprises an output device, said processing circuit adapted for reporting at least two of said first, second and third identifications to a user through said output device.

51 (new). The apparatus of claim 39, wherein said interrogating circuit is further adapted for interrogating the target at a third frequency distinct from said first and second frequencies, wherein said receiving circuit is further adapted for receiving a third electrical response signal from

the target associated with said third frequency, wherein said demodulating circuit is further adapted for obtaining third data indicative of a third phase angle of said third electrical response signal, and wherein said processing circuit is further adapted for converting said third data so as to be indicative of a third reference phase angle, said third reference phase angle being the phase angle that would result from interrogating the target at said reference frequency.

52 (new). The apparatus of claim 51, wherein said processing circuit is further adapted for generating a second identification of the target based on said second reference phase angle, generating a third identification of the target based on said third reference phase angle, comparing said first, second and third identifications and determining whether at least two of said first, second and third identifications agree.

53 (new). The apparatus of claim 51, wherein said processing circuit is further adapted for generating a second identification of the target based on said second reference phase angle, and generating a third identification of the target based on said third reference phase angle, wherein the apparatus further comprises an output device, and wherein said processing circuit is adapted for reporting at least two of said first, second and third identifications to a user through said output device.

54 (new). The apparatus of claim 51, wherein said reference frequency is between two of said first, second and third frequencies.

55 (new). The apparatus of claim 37, wherein said interrogating circuit is adapted for interrogating the target at a second frequency distinct from said first frequency and interrogating the target at a third frequency distinct from said first and second frequencies, wherein said receiving circuit is adapted for receiving a second electrical response signal from the target associated with said second frequency and receiving a third electrical response signal from the target associated with said third frequency, and wherein said processing circuit is adapted for resolving said first, second, and third response signals into respective portions that are at least primarily resistive, comparing the magnitudes of said respective portions, and selecting two response signals from among said response signals based on the results of said step of comparing.

56 (new). The apparatus of claim 55, wherein the respective said portions of said first and second response signals each have a greater magnitude than said portion of said third response signal and, as a result, said selecting selects said first and second response signals, wherein said processing circuit is further adapted for obtaining second data indicative of a second phase angle of said second electrical response signal, converting said second data so as to be indicative of a second reference phase angle, said second reference phase angle being the phase angle that would result from interrogating the target at said reference frequency, generating a second identification of the target based on said second reference phase angle, comparing said first and second identifications, and determining whether said first and second identifications agree according to one or more criteria.

57 (new). The apparatus of claim 55, wherein the respective said portions of said first and second response signals each have a greater magnitude than said portion of said third response

signal and as a result said selecting selects said first and second response signals, wherein said processing circuit is further adapted for obtaining second data indicative of a second phase angle of said second electrical response signal, converting said second data so as to be indicative of a second reference phase angle, said second reference phase angle being the phase angle that would result from interrogating the target at said reference frequency, generating a second identification of the target based on said second reference angle, and reporting both said first and second identifications to a user.